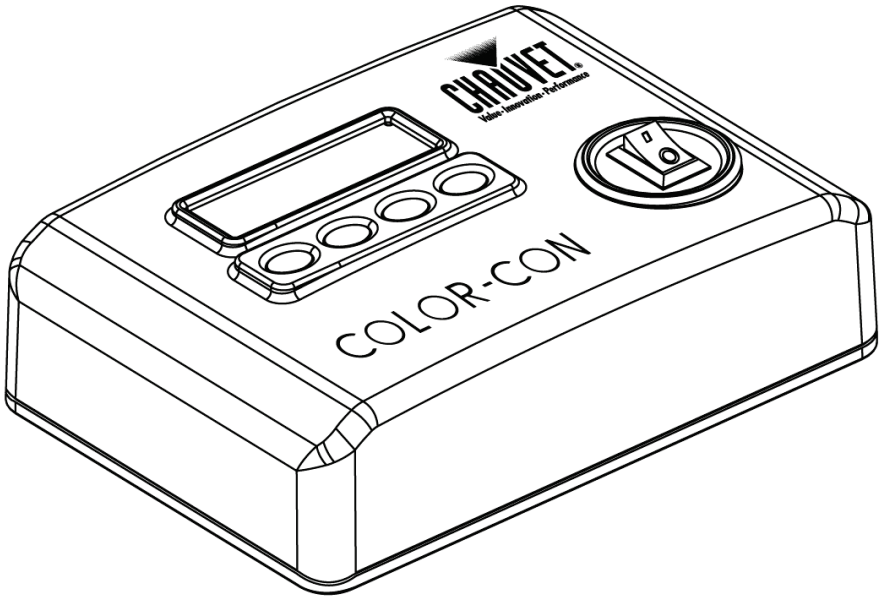
COLORADO™ CONTROLLER

User Manual



Edition Notes

CHAUVET released this edition of the COLORado™ Controller (COLOR-CON) User Manual Rev. 01d in August 2009.

The COLORado™ Controller User Manual Rev. 01d covers the description, safety precautions, installation, programming, operation and maintenance of the CHAUVET COLORado™ Controller.

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Intended Audience

Chauvet provides the COLORado™ Controller User Manual Rev. 01d with each COLORado™ Controller unit. Any person in charge of installing, operating and/or maintaining the COLORado™ Controller should read this manual in its entirety before installing, operating or maintaining the COLORado™ Controller.

CHAUVET Publications Hot Line

If you have any comments about the accuracy of this document or general suggestions regarding how we can improve it, please call us at (800) 762-1084 (US callers) or +1-954-929-1115 (international callers), ext. 43.

The latest versions of all CHAUVET manuals are available at CHAUVET's Web Site (www.chauvetlighting.com).

Document Revision

The COLORado™ Controller User Manual Rev. 01d supersedes all previous versions of this manual.

Please discard any older versions of this manual you may have, whether in printed or electronic format, and replace them with this version.

Unit at a Glance

Use on Dimmer	⊘	Auto Programs	✓
Outdoor Use	⊘	12 VDC, 500 mA	✓
Sound Activated	⊘	Replaceable Fuse	⊘
DMX	✓	User Serviceable	⊘
Master/Slave	⊘	Duty Cycle	⊘

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1. Before you Begin

What is Included

- One COLORado™ Controller (COLOR-CON)
- One external voltage adapter (12 VDC output)
- One IP66 to DMX adapter
- One warranty card
- One user manual

Unpacking Instructions

Immediately upon receiving a fixture, carefully unpack the carton, check the contents to ensure that all parts are present, and have been received in good condition. If any parts appear damaged from shipping or the carton itself shows signs of mishandling, notify the shipper immediately. In addition, retain the box and all the packing material for inspection.

In any event, save the carton and all packing material because, in case that you have to return the fixture to the factory, you will have to do so in its original factory box and packing.

Text Conventions

CHAUVET manuals use the following text conventions within the regular text as well as inside tables.

CONVENTION	MEANING
1~512	A range of values
50/60	A set of mutually exclusive values in the text
[10]	A DIP switch to be configured
<SET>	A key to be pressed on the fixture's control panel
Settings	A menu option that can be selected but not modified
MENU > Settings	A sequence of menu options to be followed
[1~10]	A range of menu values of which one can be selected
Yes/No	A set of mutually exclusive menu options to choose
ON	A value to be entered or selected

Icons

CHAUVET manuals use the following icons to indicate information that requires special attention on the part of the user.

ICONS	MEANING
	This paragraph contains critical installation, configuration or operation information. Failure to comply with this information may render the fixture partially or completely inoperative, cause damage to the fixture or cause harm to the user.
	This paragraph contains important installation or configuration information. Failure to comply with this information may prevent the fixture from functioning correctly.
	This paragraph reminds you of useful, although not critical, information.

Safety Instructions

Please read the following instructions carefully because they include important safety information about the installation, usage and maintenance of this product.

There are no user serviceable parts inside the COLORado™ Controller. Any reference to servicing this unit you may find from now on in this User Manual will only apply to properly CHAUVET certified technicians. Do not open the housing or attempt any repairs unless you are one of them.

In the unlikely event that your COLORado™ Controller may require service, please contact CHAUVET at (954) 923-3680.

- Keep this manual for future consultation. If you sell the COLORado™ Controller to another user, make sure that they also receive this manual.
- Always make sure that you are connecting the controller' external voltage adapter to the proper voltage, as per the specifications in this manual or on the controller.
- Always disconnect the controller' external voltage adapter from the power source before servicing.
- This product is for indoor use only! To prevent risk of fire or shock, do not expose the controller or its external voltage adapter to rain or moisture.
- Make sure there are no flammable materials close to the controller or the fixture(s) it controls while operating.
- Always secure the controlled fixture(s) to a fastening device using a safety chain.
- Maximum ambient temperature (Ta) is 104° F (40° C). Do not operate the fixture at a higher temperature.
- In the event of a serious operating problem, stop using the controller or the fixture(s) immediately!
- Never connect the COLORado™ controller to a dimmer pack.
- Make sure the controller's external voltage adapter housing or cable are not cracked, crimped or damaged.
- Never disconnect the external voltage adapter by pulling or tugging on the power cable.
- Avoid direct eye exposure to the controlled fixtures' light sources while they are on.

Please refer to all applicable local codes and regulations for proper installation of the COLORado™ Controller or its associated LED fixture(s).

2. Introduction

System Description

The COLORado™ Controller (COLOR-CON) is the proprietary 4-channel DMX controller for the COLORado™ and COLORdash™ fixtures.

It consists of a small stand-alone case and an external 12 VDC voltage adapter. The output for the controlled COLORado™ and COLORdash™ LED fixtures is a 3-pin IP66 rated connector at the end of a pigtail cable. The DMX input and output are on the body of the controller and use regular 3-pin XLR connectors.

The COLOR-CON controls its associated fixtures using the ID address method, not the regular DMX addressing method. Therefore, the COLOR-CON cannot control the COLORdash™ Accent fixture because this one lacks the ID address feature.

The COLOR-CON has a back lit, two-row LCD module and four programming buttons (MODE, SETUP, UP and DOWN) for fixture configuration.

The User Manual of those COLORado™ and COLORdash™ fixtures that work with the COLOR-CON may also have a chapter dedicated to its connectivity and operation.

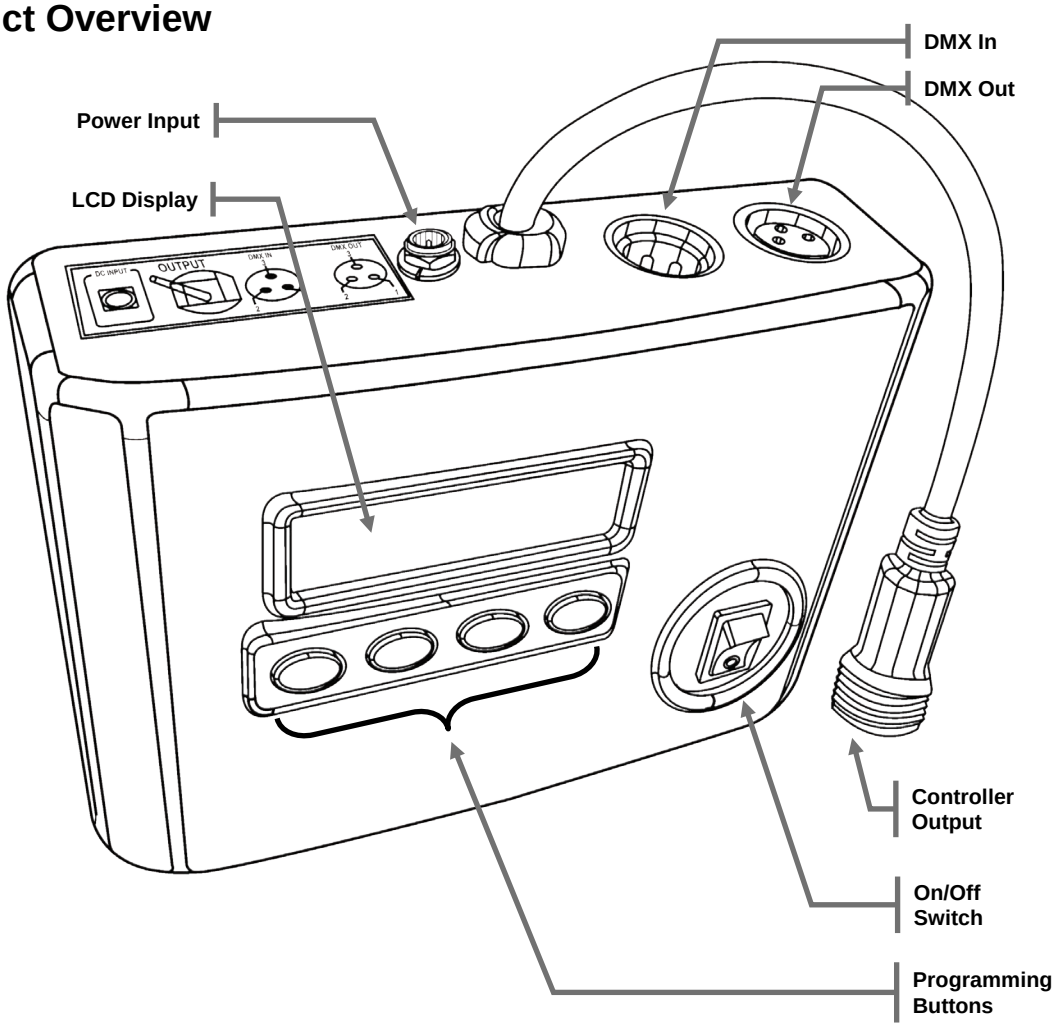
Features

- 4-channel DMX controllable from a standard DMX controller
- 16 editable programs
  - Eight color wash programs
  - Eight effect programs
- Controls up to 66 units (using ID addressing)
- Eight user-programmable shows with 100 steps each
- Full RGB color mixing
- Control of each pod (COLORado™ 3 only)
- Playback schedules via internal clock
- LCD display with password protection

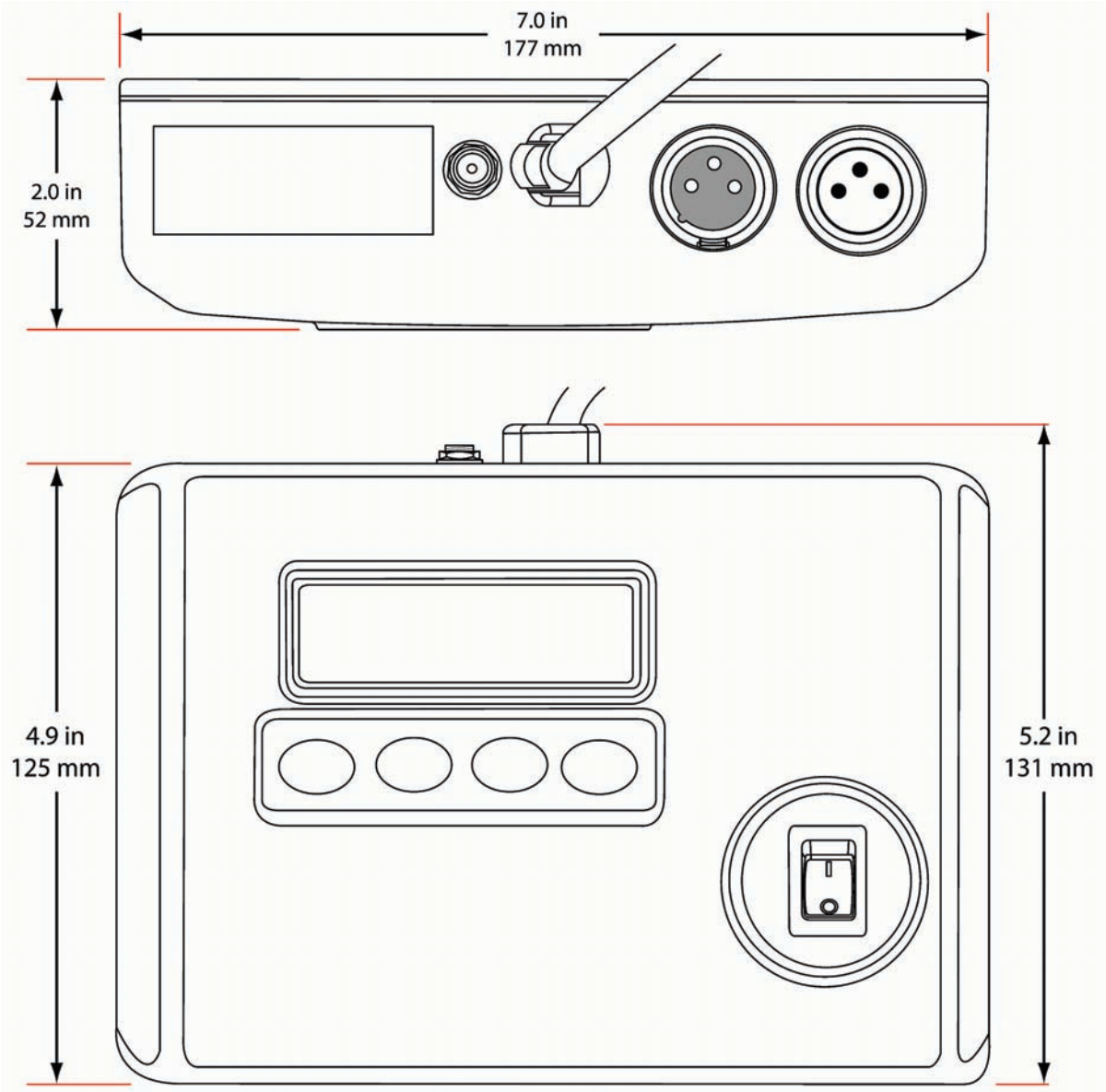
DMX Channel Summary

CHANNEL	FUNCTION
1	Wash programs (1~8)
2	Effect programs (1~8)
3	Custom programs (1~8)
4	On/Off

Product Overview



Product Dimensions



3. Setup

AC Power

The COLORado™ Controller (COLOR-CON) has an external voltage adapter that provides it with 12 VDC (500 mA minimum).

The input voltage for this voltage adapter is set to match the mains voltage in the market where the COLOR-CON will operate. Please refer to the voltage adapter's manual for more information.

Always connect the COLOR-CON and its associated LED fixtures to a protected circuit with an appropriate electrical ground to avoid the risk of electrocution or fire.

To determine the power requirements for the COLOR-CON and its associated LED fixtures see the label affixed to the side of the controller or each fixture. Alternatively, you may refer to their respective specifications charts.

The listed current rating indicates the maximum current draw during normal operation. Please refer to the *Sizing the Circuit Breakers* section in the Appendix chapter of this manual.

Never connect the COLOR-CON or any of its associated LED fixtures to a rheostat (variable resistor) or dimmer circuit, even if the rheostat or dimmer channel serves only as a 0 to 100% switch.

Fuse Replacement

The COLOR-CON has no internal fuses. However, the external voltage adapter may have one. Please refer to the external voltage adapter's manual to see if it has a fuse you may have to change.

Refer to the respective COLORado™ LED fixture's user manual to learn whether they have a fuse you may have to change.

When applicable, always disconnect the fixture's power cord before replacing™ a blown fuse, and always replace it with a fuse of the same type and rating.

COLOR-CON DMX Linking

If using the COLORado™ Controller (COLOR-CON) along with other DMX compatible fixtures, it is possible to control them individually with a single DMX controller. DMX compatible fixtures use a serial data link between them. If you are not familiar with the DMX standard, please refer to the *DMX Primer* and *DMX Connectivity* sections in the Appendix chapter of this manual.

Refer to the DMX Channel Summary in this chapter for a brief description of what COLOR-CON features can the DMX controller control.

DMX Connection

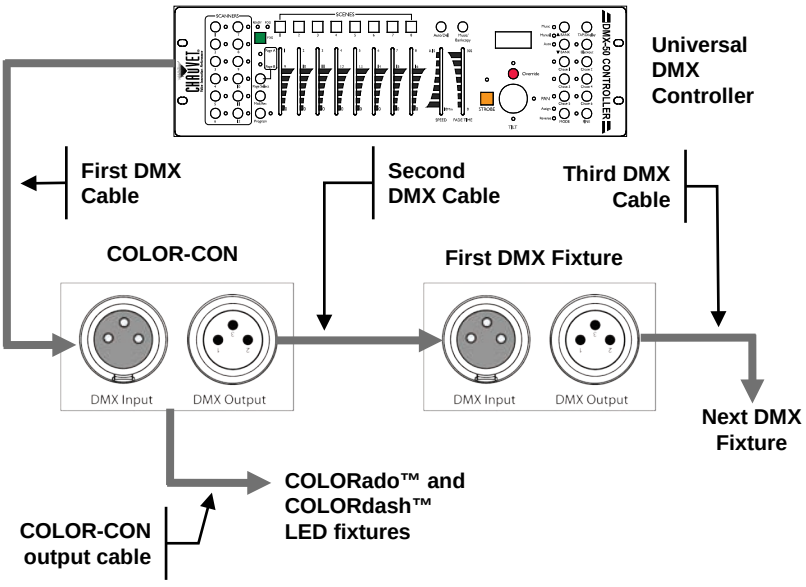
The COLORado™ Controller (COLOR-CON) uses the DMX data connection for its DMX 4-channel mode. See the Introduction chapter for a brief description of this mode and the Operation Instructions chapter to learn how to configure the COLOR-CON controller to work in this mode.

The procedure below illustrates a possible connection method.

1. Connect the 3-pin, male connector of the first DMX cable to the DMX Output connector (3-pin, female) of the DMX controller.
2. Connect the 3-pin, female connector of the first DMX cable coming from the controller to the DMX Input connector (3-pin, male) of the COLOR-CON.
3. Connect the 3-pin, male connector of the second DMX cable to the DMX Output connector (3-pin, female) of the COLOR-CON
4. Connect the 3-pin, female connector of the second DMX cable coming from the COLOR-CON to the DMX Input connector of the first DMX compatible fixture.
5. Continue linking the other DMX compatible fixtures in the same way.

The figure below is only an example of a possible DMX serial connection. Although the COLOR-CON appears as the first unit in the DMX serial connection, it could be physically in any position of the DMX serial link.

DMX Data Connection Diagram



The COLOR-CON output cable is of the IP66 type, and it is only for those compatible COLORado™ and COLORdash™ LED fixtures it will control.

Although this output cable comes with an IP66 to 3-pin XLR adapter, DO NOT connect any other fixture to this cable, but the ones mentioned above.

COLOR-CON Fixture Linking

The COLORado™ Controller (COLOR-CON) uses the ID addressing method to control its associated COLORado™ and COLORdash™ LED fixtures. This allows the user to setup the LED fixtures in three basic ways, single row, standard block and repeated row block.

Single Row Application

In this application, the fixtures appear in a single row. All the fixtures have sequential ascending ID addresses for the COLOR-CON to control each fixture individually.

Fixture Setup

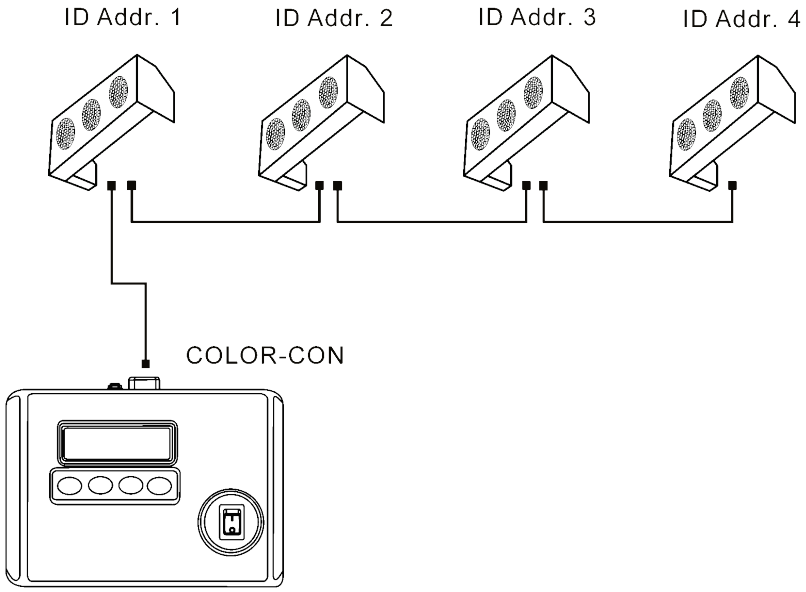
- Set each LED fixture to ID ON or SLAVE, and to STAGE 1 mode (consult the fixture's user manual)
- Do not set the fixture's DMX address, as the COLOR-CON does not need it.
- For Effect and Custom programs, configure the ID address of each fixture in sequential ascending order
- For Wash programs, configure all the fixtures as ID address **001**.

COLOR-CON Setup

- Refer to the *Operating Instructions* chapter of this manual.
- For Effect programs, limit the Range to the number of actually used ID addresses. For the example below, the Range must be **4**.
- For Wash programs, use a single ID address, preferably **001**.

Fixture Connection

Connect the fixtures in a regular DMX daisy chain as indicated below, ensuring that the first fixture connects to the they COLOR-CON output cable.



For a better visual effect, make sure to connect the LED fixtures in the correct order.

Standard Block Application

In this type of application, the fixtures appear in repeated rows of the same length to form a block. For instance, three rows of fixtures with three fixtures per row to form a 3 x 3 block. Each of the fixtures has unique, sequential ascending ID addresses for the COLOR-CON to control each fixture individually.

Fixture Setup

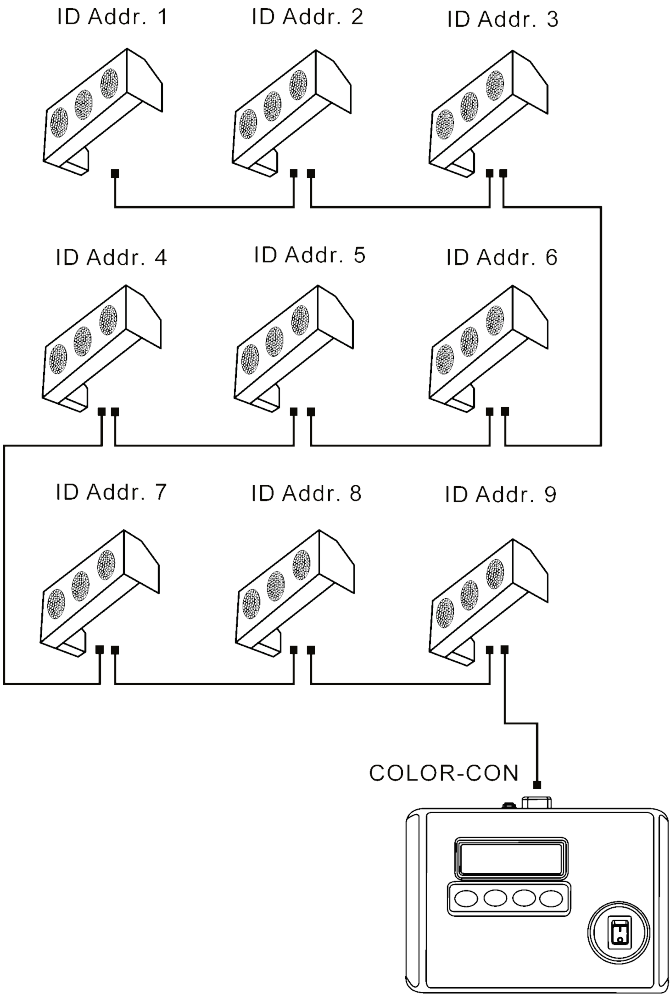
- Set each LED fixture to ID ON or SLAVE, and to STAGE 1 mode (consult the fixture's user manual)
- Do not set the fixture's DMX address, as the COLOR-CON does not need it.
- For Effect and Custom programs, configure the ID address of each fixture in sequential ascending order
- For Wash programs, there is not need to set the ID address.

COLOR-CON Setup

- Refer to the *Operating Instructions* chapter of this manual.
- For Effect programs, limit the Range to the number of actually used ID addresses. For the example below, the Range must be **9**.
- For Wash programs, there is not need to set an ID address.

Fixture Connection

Connect the fixtures in a regular DMX daisy chain as indicated below, ensuring that the first fixture connects to the they COLOR-CON output cable.



For a better visual effect, make sure to connect the LED fixtures in the correct order.

Repeated Row Block Application

In this type of application, the fixtures appear in repeated rows of the same length to form a block. For instance, three rows of fixtures with three fixtures per row to form a 3 x 3 block. In this application, the fixtures form groups, each with its own sequential ascending ID addresses. This way, the COLOR-CON will control each group of fixtures individually. For other types of effects, you may group the fixtures in columns, diagonal lines, or even place them in random positions within the block.

Fixture Setup

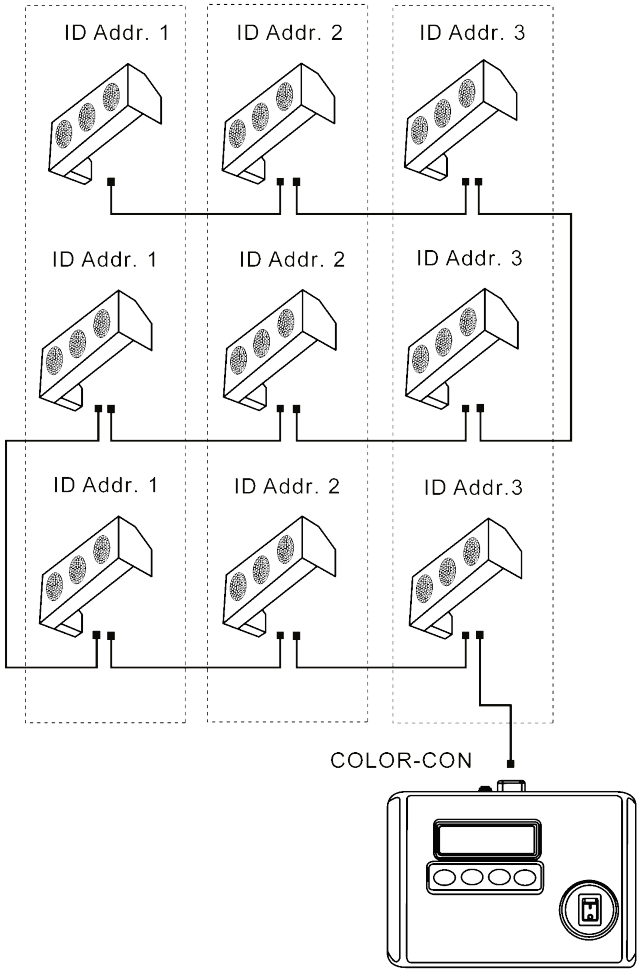
- Set each LED fixture to ID ON or SLAVE, and to STAGE 1 mode (consult the fixture's user manual)
- Do not set the fixture's DMX address, as the COLOR-CON does not need it.
- For Effect and Custom programs, configure the ID address of each fixture in sequential ascending order
- For Wash programs, there is not need to set the ID address.

COLOR-CON Setup

- Refer to the *Operating Instructions* chapter of this manual.
- For Effect programs, limit the Range to the number of actually used ID addresses. For the example below, the Range must be **3**.
- For Wash programs, there is not need to set an ID address.

Fixture Connection

Connect the fixtures in daisy chain as indicated below, ensuring that they are in the correct order for a better visual effect.



For a better visual effect, make sure to connect the LED fixtures in the correct order.

Mounting

Orientation

Always mount the COLORado™ Controller (COLOR-CON) and its controlled LED fixtures in any safe position while making sure that there is adequate room around them for ventilation.

Rigging

The COLORado™ Controller (COLOR-CON) consists of a controller unit and an external voltage adaptor that provides 12 VDC, 500 mA minimum.

- When selecting an installation location for the COLOR-CON or its associated LED fixtures, consider ease of access to each unit for operation, programming adjustments and routine maintenance.
- Never mount the COLOR-CON or its associated LED fixtures in places where rain, high humidity, extreme temperature changes or restricted ventilation may affect them.
- Make sure that the location where you are mounting the COLOR-CON associated LED fixtures can support their weight. Please see the "Technical Specifications" section of the fixtures' user manuals for the weight requirement of each fixture.

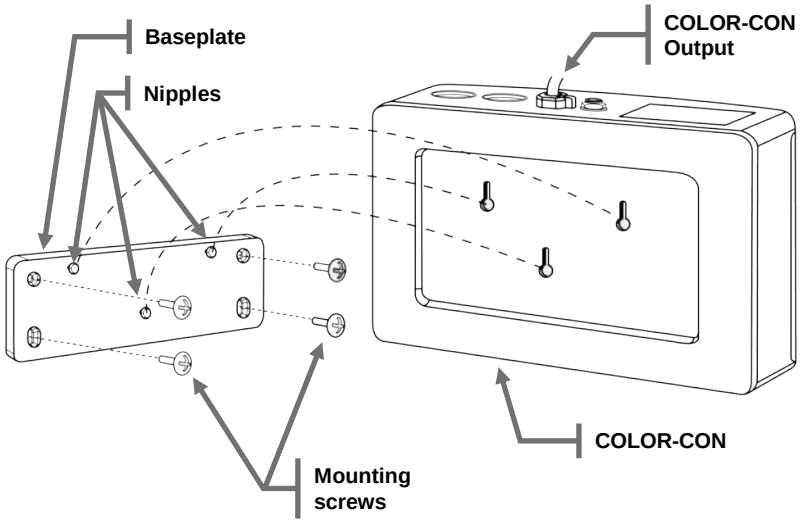
COLOR-CON Mounting

You should mount the COLOR-CON on a flat, dry surface, whether plywood or other suitable material. The COLOR-CON's detachable baseplate has four holes to accommodate regular screws for this purpose.

In any case, remember the recommendations indicated above regarding access to the unit and necessary room for ventilation.

The diagram below shows the detachable baseplate and its three nipples. These must slide all the way inside the corresponding slots on the back of the COLOR-CON to ensure a safe unit rigging.

COLOR-CON Mounting Diagram



Make sure there is a suitable power outlet for the COLOR-CON voltage adapter near the location where you will mount the COLOR-CON unit.

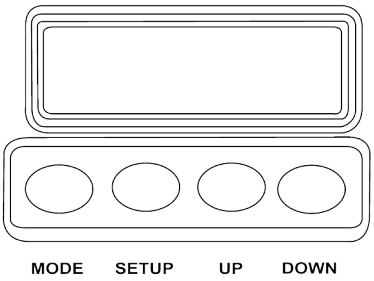
4. Operating Instructions

Control Panel Description

The COLORado™ Controller (COLOR-CON) has an LCD display and four buttons to configure its functions.

The table below explains the functions of those buttons.

Button	Function
<MODE>	Used to access the menu or to return to a previous menu option
<SETUP>	Selects a menu option
<UP>	Scrolls through menu options in descending order
<DOWN>	Used to select and store the current menu or option within a menu



Navigation Functions

The COLOR-CON navigation functions allow the user to setup all the COLOR-CON's parameters, including the access password.

Display

The COLOR-CON's LCD Display has two lines. The upper line shows the menu items the user selects from the menu map. While navigating the menu map, only the upper row is active.

Menu Level Change

To move to the right side of the menu map (next level) press **<SETUP>**. This will serve to accept the current option and move forward.

To move to the left side of the menu map (previous level) press **<MODE>**. This will return the display to the previous option. In most cases, the COLOR-CON will save the current value on exit, regardless of whether it has changed.

Available Options

When the user reaches a menu function that has an option to be accepted or changed, the display will show it on its lower row.

Select Options

To move up or down in the menu map, use **<UP>** and **<DOWN>**. This will show the available options for the current menu item.

When setting up the password, the **<UP>** button is also the equivalent of a "1," whereas the **<DOWN>** button is the equivalent of a "0."

COLOR-CON Menu Map

1st Level	2nd Level	3rd Level	4th Level	5th Level	6th Level	Description
MENU	*1. Wash Program*	*Wash [1~8]*	*Edit*	***Step Time*** **[000~255]**	N/A	Defines the duration of each program step
				Fade Time **[000~255]**	N/A	Defines the fade time for each program step
	2. Effect Program	*Effect [1~8]*	*Edit*	***Speed*** **[000~255]**	N/A	Defines the speed of the effect program
	3. Custom Program	*Custom [1~8]*	*Edit*	***Scene*** **[001~100]**	***ID address*** **[000~066]**	Assigns an ID address
					Step time **[000~255]**	Defines the step duration
					Fade time **[000~255]**	Defines the fade duration
					Red **[000~255]**	Defines the level of red
					Green **[000~255]**	Defines the level of green
					Blue **[000~255]**	Defines the level of blue
					Module **[000~006]**	Activate LED module(s) (multi LED module fixtures only)
					Strobe **[000~020]**	Selects the strobe frequency
	4. Play Schedule	*>>>*	N/A	N/A	N/A	Activates the pre-configured schedule(s)
	5. Clock	*Time Now*	*dd/mm/yyyy hh:mm:ss*	N/A	N/A	Shows current time and date
		Edit time	**dd/mm/yyyy**	**hh:mm:ss**	N/A	Edits time and date
	6. Schedule	*Wash [1~8]* *Effect [1~8]* *Custom [1~8]*	***Start*** **[00:00~23:59]**	***End*** **[00:00~23:59]**	N/A	Sets the daily schedule for each Wash, Effect and Custom program
	7. Settings	*DMX address*	**[001~255]**	N/A	N/A	Sets the unit's DMX address
		Range	**[002~066]**	N/A	N/A	Limits the ID address range
		Allow edit	**Yes/No**	N/A	N/A	Allows or denies editing
		Detect device	**[001~512]**	N/A	N/A	Detects a specific device
		Reset to Factory settings	**Yes/No**	N/A	N/A	Defaults the COLOR-CON to its factory settings
	8. Password	*Set password*	**Up/Down**	N/A	N/A	Sets the unit's password

Programming Procedure

To start programming the COLORado™ Controller (COLOR-CON), the display must show ***MENU***. On power up, ***MENU*** shows on the display automatically. However, if someone has already configured the COLOR-CON, its display may be showing the current mode.

If ***MENU*** does not show on the display, press **<MODE>** repeatedly until ***MENU*** appears.

This is the top of the menu map. At this point, **<SETUP>**, **<UP>** and **<DOWN>** will not work.

Wash Program Usage

- With ***MENU*** showing on the display, press **<MODE>** once.

  The upper row of the display will show ***1. Wash program***.
- Press **<SETUP>** to select this option.

  The upper row of the display will show ***Wash [1]***.
- Alternatively, to select any of the other Wash programs (2~8), press **<UP>** or **<DOWN>**.

  The selected Wash program will start playing automatically.

Wash Program Editing

- With the selected Wash program (1~8) showing on the upper row of the display, press **<SETUP>**.

  If program editing is set to **Yes** in the "Settings" section, ***Edit*** will show on the display's lower row. Otherwise, refer to the "Settings" section to enable program editing.

Fade Time

Selects the fade time for each step in the program

- Press **<SETUP>** to configure the selected Wash program.

  Fade time will show on the lower row of the display, along with its current value (001~255).
- Press **<UP>** or **<DOWN>** to change the value (1 unit = 1 second).
- Once done, press **<SETUP>** to configure the *Step time* parameter.

Step Time

Selects the duration of each program step

Step time will show on the lower row of the display, along with its current value (001~255).

- Press **<UP>** or **<DOWN>** to change the value (1 unit = 5 seconds).

Exiting Wash Program

- Press **<MODE>** to save the current values.

  The display will briefly show ***OK Save*** on its lower row and it will go back to show the selected Wash program and ***Edit.***
- Press **<MODE>** again to exit Wash Program Editing.

  The display will show the selected Wash program***.***
- Press **<MODE>** again to exit to the second menu level.

  The upper row of the display will show ***1. Wash program***.

Effect Program Usage

- With ***MENU*** showing on the display, press **<MODE>** twice.

  The upper row of the display will show ***2. Effect program***.
- Press **<SETUP>** to select this option.

  The upper row of the display will show ***Effect [1]***.
- Alternatively, to select any of the other Effect programs (2~8), press **<UP>** or **<DOWN>**.

  The selected Effect program will start playing automatically.

Programming Procedure (Cont.)

Effect Program Editing

- With the selected Effect program (1~8) showing on the upper row of the display, press **<SETUP>**.

  If program editing is set to **Yes** in the "Settings" section, ***Edit*** will show on the display's lower row. Otherwise, refer to the "Settings" section to enable program editing.

Speed

Selects the speed at which the program executes

- Press **<SETUP>** to configure the selected Effect program.

  Speed will show on the lower row of the display, along with its current value (001~255).
- Press **<UP>** or **<DOWN>** to change the value.
- Press **<MODE>** to save the current value.

  OK Save will show on the lower row of the display.

Exiting Effect Program

- Press **<MODE>** to exit Effect Program Editing.

  The display will briefly show ***OK Save*** on its lower row and it will go back to show the selected Effect program and ***Edit.***
- Press **<MODE>** again to exit Effect Program Editing.

  The display will show the selected Effect program***.***
- Press **<MODE>** again to exit to the second menu level.

  The upper row of the display will show ***2. Effect program***.

Custom Program Usage

- With ***MENU*** showing on the display, press **<MODE>** three times.

  The upper row of the display will show ***3. Custom program***.
- Press **<SETUP>** to select this option.

  The upper row of the display will show ***Custom [1]***.
- Alternatively, to select any of the other Custom programs (2~8), press **<UP>** or **<DOWN>**.

  The selected Custom program will start playing automatically.

Custom Program Editing

- With the selected Custom program (1~8) showing on the upper row of the display, press **<SETUP>**.

  If program editing is set to **Yes** in the "Settings" section, ***Edit*** will show on the display's lower row. Otherwise, refer to the "Settings" section to enable program editing.

Scene

Selects a scene in the 000~100 range

- Press **<SETUP>** to configure the selected Custom program.

  Scene will show on the upper row of the display, along with its current value (001~100).
- Press **<UP>** or **<DOWN>** to change the scene, if necessary.

Any unused scene should have its Step time set to "0."

ID Address

Selects the ID address of the fixtures on which this program will operate

- Press **<SETUP>** to configure the ID address.

  ID address will show on the upper row of the display, along with its current value (001~66).
- Press **<UP>** or **<DOWN>** to change the ID address, if necessary.

Programming Procedure (Cont.)

Step Time Selects the duration of each program step

- Press **<SETUP>** to configure the step time.

  Step time will show on the lower row of the display, along with its current value (000~255).
- Press **<UP>** or **<DOWN>** to change the value.

From "000~010," the time duration per unit is 0.1 seconds.
From "011~255," the time duration per unit is 1.0 seconds.

Fade Time Selects the fade time for each step in the program

- Press **<SETUP>** to configure the fade time.

  Fade time will show on the lower row of the display, along with its current value (000~255).
- Press **<UP>** or **<DOWN>** to change the value (1 unit = 1 second).

Red Selects the intensity of the red color

- Press **<SETUP>** to configure the red color.

  Red will show on the upper row of the display, along with its current value (000~255).
- Press **<UP>** or **<DOWN>** to change the value.

Green Selects the intensity of the green color

- Press **<SETUP>** to configure the green color.

  Green will show on the upper row of the display, along with its current value (000~255).
- Press **<UP>** or **<DOWN>** to change the value.

Blue Selects the intensity of the blue color

- Press **<SETUP>** to configure the blue color.

  Blue will show on the upper row of the display, along with its current value (000~255).
- Press **<UP>** or **<DOWN>** to change the value.

By adjusting the red, green and blue values, the user can define 16,777,216 possible color combinations.

Programming Procedure (Cont.)

Module

Enables the various LED modules in the COLORado™ 3 and COLORado™ 6 as well as in the COLORdash™ Batten and COLORdash™ Quad

- Press **<SETUP>** to configure the *Module* parameter.

  Module will show on the upper row of the display, along with its current value (000~006).
- Press **<UP>** or **<DOWN>** to change the value as follows:

SETTING	COLORADO™ 3	COLORDASH™ BATTEN
0	Modules 1, 2, and 3 on	Modules 1, 2, 3 and 4 on
1	Module 1 on	Module 1 on
2	Module 2 on	Module 2 on
3	Module 3 on	Modules 1 and 4 on
4	Modules 1 and 2 on	Modules 2 and 3 on
5	Modules 2 and 3 on	Modules 1 and 2 on
6	Modules 1 and 3 on	Modules 1, 2 and 4 on

The above values are for reference only. The corresponding fixture's manual will tell you which LED modules will be on based on the setting of the COLOR-CON's Module parameter.

For the COLORado™ 1 and the other compatible single LED module fixtures, the existing LED module will act as module #1.

Strobe

Selects the frequency of the strobe

- Press **<SETUP>** to configure the blue color.

  Strobe will show on the upper row of the display, along with its current value (000~020).
- Press **<UP>** or **<DOWN>** to change the value (1 unit = 1 Hz).

000 = No strobe (continuously on)

Exiting Custom Program

- At any stage of the programming process, press **<MODE>** to save the current values.

  OK Save will show on the lower row of the display.
- Press **<MODE>** again to exit *Effect Program Editing*.

  The display will briefly show ***OK Save*** on its lower row and it will go back to show the selected Effect program and ***Edit.***
- Press **<MODE>** again to exit Effect Program Editing.

  The display will show the selected Effect program***.***
- Press **<MODE>** again to exit to the second menu level.

  The upper row of the display will show ***3. Custom program***.

Play Schedule

- With ***MENU*** showing on the display, press **<MODE>** four times.

  The upper row of the display will show ***4. Play Schedule***.
- Press **<SETUP>** to activate the pre-configured schedule.

  Three chevrons (**>>>**) will show on the lower row of the display indicating that the pre-configured schedule is in process of execution.

Programming Procedure (Cont.)

Clock Usage

- With ***MENU*** showing on the display, press **<MODE>** five times.
  The upper row of the display will show ***5. Clock***.
- Press **<SETUP>** to see or edit the current time and date.
  Time now will show on the upper row of the display. Otherwise, press **<UP>**.
- Press **<SETUP>** to see the current time and date.
- Press **<MODE>** twice to exit to the second menu level.

Time & Date Setting

- With ***Time now*** showing on the display, press **<UP>**.
  Edit time will show on the upper row of the display.
- Press **<SETUP>** to edit the time and date.
  00/00/2000 will show on the upper row of the display.
  00:00:00 will show on the lower row of the display

Day of the month

The cursor will be blinking over the day of the month digit (upper row, second ***0*** from left),

- Press **<UP>** as needed to set the day of the month (**00~31**).
- Press **<SETUP>** to move the cursor to the month digits.

Month

The cursor will be blinking over the month digit (upper row, fourth ***0*** from left)

- Press **<UP>** as needed to set the month (**00~12**).
- Press **<SETUP>** to move the cursor to the year digits.

Year

The cursor will be blinking under the year digit (upper row, right most ***0***)

- Press **<UP>** as needed to set the month (**00~12**).
- Press **<SETUP>** to move the cursor to the hour digits.

Hour

The cursor will be blinking over the hour digit (lower row, second ***0*** from left)

- Press **<UP>** as needed to set the hour in military (24 hours) time (**00~23**).
- Press **<SETUP>** to move the cursor to the minutes digits.

Minutes

The cursor will be blinking over the minutes digit (lower row, fourth ***0*** from left)

- Press **<UP>** as needed to set the minutes (**00~59**).
- Press **<SETUP>** to move the cursor to the seconds digits.

Seconds

The cursor will be blinking over the seconds digit (lower row, right most ***0***)

- Press **<UP>** as needed to set the seconds (**00~59**).
- Press **<MODE>** to save the new time and date.
  OK Save will show on the upper row of the display.
- Press **<MODE>** twice to exit to the second menu level.

Schedule

- With ***MENU*** showing on the display, press **<MODE>** six times.
  The upper row of the display will show ***6. Schedule***.
- Press **<SETUP>** to see the current schedule.
  Wash [1] will show on the upper row of the display. Otherwise, it may show the last program whose schedule the user has seen or edited.
  The lower row of the display will show ***hh:mm >> hh:mm***. If the schedule is not set, the lower row of the display will show all zeroes.
- Press **<UP>** or **<DOWN>** to see the schedule for the other programs (*Wash 2~8*, *Effect 1~8* or *Custom 1~8*).
- Press **<MODE>** once to exit to the second menu level.

Programming Procedure (Cont.)

Schedule Configuration

- With the selected program on the upper row of the display, press **<SETUP>**.

  The display will show ***Start*** and the start time (***hh:mm***) below. It will also show ***End*** and the end time below (***hh:mm***).

Start Hour

The cursor will be blinking over the hour digit (lower row, second digit from left). Otherwise, press **<SETUP>** to move the cursor accordingly.

- Press **<UP>** as needed to set the hour in military (24 hours) time (**00~23**).
- Press **<SETUP>** to move the cursor to the *minutes* digits.

Start Minutes

The cursor will be blinking over the minutes digit (lower row, fourth digit from left)

- Press **<UP>** as needed to set the minutes (**00~59**).
- Press **<SETUP>** to move the cursor to the *seconds* digits.

End Hour

The cursor will be blinking over the hour digit (lower row, third digit from right)

- Press **<UP>** as needed to set the hour in military (24 hours) time (**00~23**).
- Press **<SETUP>** to move the cursor to the *minutes* digits.

End Minutes

The cursor will be blinking over the minutes digit (lower row, first digit from left)

- Press **<UP>** as needed to set the minutes (**00~59**).
- Press **<SETUP>** to move the cursor to the *seconds* digits.
- Press **<MODE>** to save the new time and date.

  OK Save will show on the lower row of the display.

Exiting Schedule Configuration

- Press **<UP>** or **<DOWN>** to select another program.
- Repeat the steps above.
- When done configuring the schedule, press **<MODE>** twice to exit to the second menu level.

If two schedule ranges overlap (the current schedule has not reached its End Time yet when a new schedule has reached its Start Time), the new schedule will override the still running one.

Settings

- With ***MENU*** showing on the display, press **<MODE>** seven times.

  The display will show ***7. Settings***.
- Press **<SETUP>**.

  The display will show ***DMX address***.
- Alternatively, to select one of the other parameters (*Range, Allow Edit, Detect Device* or *Reset to Factory Settings)*, press **<UP>** or **<DOWN>**.

DMX Address

Sets the DMX Address of the first fixture's DMX channel (See "DMX Primer")

- With the display showing ***DMX address***, press **<SETUP>**.

  The lower row of the display will show the current starting DMX address (**1~255**).
- Press **<UP>** or **<DOWN>** to change the starting DMX address.
- Press **<SETUP>** to accept the new stating DMX address.

  The display will briefly show ***OK save*** and it will return to showing ***DMX address***.
- Press **<DOWN>** to select another setting parameter or press **<MODE>** to exit to the second menu level.

Programming Procedure (Cont.)

Range

Limits the range of ID addresses to the ones actually assigned

- With the display showing ***Range***, press **<SETUP>**.
  The lower row of the display will show the current ID address range (**1~66**).
- Press **<UP>** or **<DOWN>** to change the starting ID address range.
- Press **<SETUP>** to accept the new stating DMX address.
  The display will briefly show ***OK save*** and it will return to showing ***Range***.
- Press **<DOWN>** to select another setting parameter or press **<MODE>** to exit to the second menu level.

The Range setting is for the Effect and Custom program to execute without the interruptions caused by the COLOR-CON sending data to non-existing fixtures.

Allow Edit

Allows or denied program editing capabilities

- With the display showing ***Allow edit***, press **<SETUP>**.
  The lower row of the display will show ***[YES]*** ***NO***. The selected option will show between brackets.
- Alternatively, press **<UP>** or **<DOWN>** to change the selected option to **[NO]**.
- To activate the selected option, press **<SETUP>**.
  The display will briefly show ***OK save*** and it will return to showing ***Allow edit***.
- Press **<DOWN>** to select another setting parameter or press **<MODE>** to exit to the previous level.

Detect Device

Detects new LED fixtures connected after the COLOR-CON was on

- With the display showing ***Detect device***, press **<SETUP>**.
  The lower row of the display will show ***[000]***.
- Press **<UP>** or **<DOWN>** to change the ID address of the fixture(s) you want the COLOR-CON to detect.
- To activate the selected option, press **<SETUP>**.
  The display will briefly show the selected address and **>>>** and it will return to showing ***Detect device***.
- Press **<DOWN>** to select another setting parameter or press **<MODE>** to exit to the previous level.

The COLOR-CON will automatically detect all the fixtures already connected to it if you have energized them before you turned on the COLOR-CON. That is why you must always turn the COLOR-CON on the last.

Reset to Factory Settings

Defaults the COLOR-CON to its factory settings

- With the display showing ***Reset to Factory settings***, press **<SETUP>**.
  The lower row of the display will show ***YES*** ***[NO]***. The selected option will show between brackets.
- Press **<UP>** or **<DOWN>** to change the setting.
- To activate the selected option, press **<SETUP>**.
  If the option was [Yes], the display will turn off whole the COLOR-CON resets. The display will return to showing ***Reset to Factory settings***.
- Press **<DOWN>** to select another setting parameter or press **<MODE>** to exit to the previous level.

The Reset to Factory Settings operation does not affect the Custom programs.

Programming Procedure (Cont.)

Password Setting

- With the display showing ***Set password***, press **<SETUP>**.
  The lower row of the display will show ***[ ]***.
- Press **<UP>** or **<DOWN>** to set each eight digits of the password.
  The display will show an asterisk (✱) each time you press **<UP>** or **<DOWN>**.
- Alternatively, if you want to clear the entered password, press **<UP>** or **<DOWN>** a ninth time.
  In this case, the display will go back to show ***[ ]***.
- To save the new password, press **<SETUP>**.
  The display will briefly show ***OK Save*** and it will return to showing ***Set password***.
- Press **<DOWN>** to select *Password ON/OFF* to activate the password, or press **<MODE>** to exit to the second menu level.

The <UP> button writes a "1" in the Password line, while the <DOWN> button writes a "0."

Password Enabling

- With the display showing ***Password ON/OFF***, press **<SETUP>**.
  The upper row of the display will show ***Password***.
  The lower row of the display will show ***ON [OFF]***. The selected option will show between brackets.
- Press **<UP>** to change the setting.
  The display will show ***[ON] OFF***.
- To activate the password, press **<SETUP>**.
  The display will briefly show ***OK Save*** and it will return to showing ***Password ON/OFF***.
- Press **<MODE>** to exit to the second menu level.

Password Disabling

- With the display showing ***Password ON/OFF***, press **<SETUP>**.
  The upper row of the display will show ***Password***.
  The lower row of the display will show ***[ON] OFF***. The selected option will show between brackets.
- Press **<DOWN>** to change the setting.
  The display will show ***ON [OFF]***.
- To deactivate the password, press **<SETUP>**.
  The display will briefly show ***OK Save*** and it will return to showing ***Password ON/OFF***.
- Press **<MODE>** to exit to the second menu level.

Password Usage

The password will become active the next time you turn the COLOR-CON on.

- With the upper row of the display showing ***Password*** and the lower row showing ***[ ],*** press **<UP>** or **<DOWN>** as needed to enter the password.
  The display will show an asterisk (✱) each time you press **<UP>** or **<DOWN>**.
- After entering the eight-digit password, press **<SETUP>**.
  If the password was correct, the display will show ***Wash [1]***. Otherwise, it will ask again for a password.

If you forget the current password, you can use the emergency password instead, which is:
<UP>, <DOWN>, <UP>, <DOWN>, <UP>, <UP>, <DOWN>, <DOWN>, or
1, 0, 1, 0, 1, 1, 0, 0.

Factory Default Values

2ND MENU LEVEL	3RD MENU LEVEL	VALUE
Wash programs	Step time	001
	Fade time	001
Effect programs	Speed	001
Custom programs	Scene	001
	ID Address	000
	Step time	000
	Fade time	000
	Red	000
	Green	000
	Blue	000
	Module	000
	Strobe	000
Clock	Date	00//00/2000
	Time	00:00:00
Scheduled times	Start	00:00
	End	00:00
Settings	DMX address	001
	Range	066
	Allow edit	No
	Detect device	000
Password	Password ON/OFF	OFF
	Set password	00000000 (Eight times **<DOWN>**)

DMX Channel Values

4-Channel Mode

Channel	Value	Percent/Setting	Function
1	001 ⇔ 010	Refresh	Select a Wash program
	011 ⇔ 030	Wash [1]	
	031 ⇔ 040	Refresh	
	041 ⇔ 060	Wash [2]	
	061 ⇔070	Refresh	
	071 ⇔ 090	Wash [3]	
	091 ⇔ 100	Refresh	
	101 ⇔ 120	Wash [4]	
	121 ⇔ 130	Refresh	
	131 ⇔ 150	Wash [5]	
	151 ⇔ 160	Refresh	
	161 ⇔ 180	Wash [6]	
	181 ⇔ 190	Refresh	
	191 ⇔ 210	Wash [7]	
	211 ⇔ 220	Refresh	
	221 ⇔ 255	Wash [8]	
2	001 ⇔ 010	Refresh	Select an Effect program
	011 ⇔ 030	Effect [1]	
	031 ⇔ 040	Refresh	
	041 ⇔ 060	Effect [2]	
	061 ⇔070	Refresh	
	071 ⇔ 090	Effect [3]	
	091 ⇔ 100	Refresh	
	101 ⇔ 120	Effect [4]	
	121 ⇔ 130	Refresh	
	131 ⇔ 150	Effect [5]	
	151 ⇔ 160	Refresh	
	161 ⇔ 180	Effect [6]	
	181 ⇔ 190	Refresh	
	191 ⇔ 210	Effect [7]	
	211 ⇔ 220	Refresh	
	221 ⇔ 255	Effect [8]	
3	001 ⇔ 010	Refresh	Select a Custom program
	011 ⇔ 030	Custom [1]	
	031 ⇔ 040	Refresh	
	041 ⇔ 060	Custom [2]	
	061 ⇔070	Refresh	
	071 ⇔ 090	Custom [3]	
	091 ⇔ 100	Refresh	
	101 ⇔ 120	Custom [4]	
	121 ⇔ 130	Refresh	
	131 ⇔ 150	Custom [5]	
	151 ⇔ 160	Refresh	
	161 ⇔ 180	Custom [6]	
	181 ⇔ 190	Refresh	
	191 ⇔ 210	Custom [7]	
	211 ⇔ 220	Refresh	
	221 ⇔ 255	Custom [8]	
4	000 ⇔ 127	Off	Set LED fixtures On or Off
	128 ⇔ 255	On	

5. Technical Information

General Maintenance

To maintain optimum performance and minimize wear, the user should clean the fixtures frequently. Usage and environment are contributing factors in determining the cleaning frequency. As a rule, the user should clean the fixtures at least twice a month. Dust build up reduces light output performance and can cause overheating. This can lead to reduced light source life and increased mechanical wear.

For fixtures containing external optical lenses, the user should clean them periodically to optimize light output. The cleaning frequency depends on the environment in which the fixture operates. Damp, smoky or particularly dirty surrounding can cause greater accumulation of dirt on the unit's optics. Even in the cleanest type of surroundings, the user should clean the external optics at least once every 30 days. CHAUVET recommends cleaning the fixture's external optics with a soft cloth using normal glass cleaning fluid.

To clean a fixture, follow the below recommendations:

- Unplug the fixture from power.
- Wait until the fixture is cold.
- Use a vacuum (or dry compressed air) and a soft brush to remove dust collected on the external vents and reachable internal components.
- Clean all external optics and glass surfaces with a mild solution of glass cleaner or isopropyl alcohol, and a soft, lint free cotton cloth or a lens cleaning tissue.
- Apply the solution directly to the cloth or tissue and drag any dirt and grime to the outside of the lens.
- Gently polish the external glass surfaces until they are free of haze and lint.
- When cleaning movable mirrors, to avoid scratching or damaging their surface, minimize the contact with the mirror surface to a minimum.

Always dry the external optics and glass surfaces carefully after cleaning them.

Never spin a fan using compressed air.

COLOR-CON Service Maintenance Guide

Symptom	Possible Cause(s)	Possible Action(s)
One LED fixture not responding to COLOR-CON	• Fixture not set as ID ON or Slave	• Set fixture as per its User Manual
	• Fixture not powered	• Verify fixture's power
	• Fixture not connected to the COLOR-CON	• Verify COLOR-CON cable and adapter
	• Fixture set to the wrong ID address	• Configure fixture to match the COLOR-CON assigned ID address
No LED fixture responds to COLOR-CON	• Fixtures not set as ID ON or Slave	• Set fixtures as per their User Manuals
	• Fixtures not connected to the COLOR-CON	• Verify COLOR-CON cable and adapter
	• Fixtures set to the wrong ID address(es)	• Configure fixtures to match the COLOR-CON assigned ID address(es)
	• Faulty COLOR-CON	• Replace COLOR-CON
Breaker/Fuse keeps blowing	• Excessive circuit load	• Check total load placed on the electrical circuit
	• Short circuit along the power wires	• Check for a short in the electrical wiring (internal and/or external)
COLOR-CON does not power up	• No power on outlet	• Check for power on outlet
	• Faulty voltage adapter	• Replace voltage adapter with the same type
	• Faulty control board	• Replace COLOR-CON
COLOR-CON's display OK, but buttons do not respond	• Faulty voltage adapter	• Replace voltage adapter with the same type
	• Faulty control board	• Replace COLOR-CON
COLOR-CON is not responding to DMX signals	• Wrong COLOR-CON's DMX addressing	• Check DMX controller and fixture addressing
	• Wrong polarity settings on the DMX controller	• Check polarity switch settings on the controller
	• Lose or damaged DMX or signal patch cables	• Check DMX cables
	• DMX signal problems	• Make sure that the DMX serial link complies with the DMX standard and fix as necessary
	• Faulty Main PCB	• Replace COLOR-CON
COLOR-CON does not retain settings after power off	• Lose internal battery	• Reseat internal battery
	• COLOR-CON does not keep the internal battery charged	• Replace internal battery • Replace COLOR-CON

If you still experience technical problems after trying the above solutions, contact CHAUVET Technical Support.

Returns Procedure

The user must send the merchandise prepaid and in the original box with its original packing and accessories. CHAUVET will not issue call tags.

Call CHAUVET and request a Return Merchandise Authorization Number (RMA #) before shipping the fixture. Be prepared to provide the model number, serial number and a brief description of the cause for the return.

The user must clearly label the package with a Return Merchandise Authorization Number (RMA #). CHAUVET will refuse any product returned without an RMA #.

DO NOT write the RMA # directly on the box. Instead, write it on a properly affixed label.

Once you are given an RMA #, please include the following information on a piece of paper inside the box:

- Your name
- Your address
- Your phone number
- The RMA #
- A brief description of the symptoms

Be sure to pack the fixture properly. Any shipping damage resulting from inadequate packaging is the customer's responsibility. As a suggestion, proper UPS packing or double-boxing is always a safe method to use.

CHAUVET reserves the right to use its own discretion to repair or replace returned product(s).

Claims

The shipper is responsible for any damage incurred during shipping. Therefore, if the merchandize appears damaged due to shipping, the customer's must submit the damage report and any related claims with the carrier, not CHAUVET. The customer must submit the report upon reception of the damaged merchandise. Failure to do so in a timely manner may invalidate the customer's claim with the carrier.

For other issues such as missing components or parts, damage not related to shipping, or concealed damage, the customer must made claims to CHAUVET within seven (7) days of receiving the merchandise.

Contact Us

World Wide

General Information

Chauvet Lighting
3000 North 29th Court
Hollywood, FL 33020
Voice: (954) 929-1115
Fax: (954).929-5560
Toll free: (800) 762-1084

Technical Support

Voice: (954) 929-1115 (Press **4**)
Fax: (954) 929-5560 (Attention: Service)

World Wide Web

www.chauvetlighting.com

Technical Specifications

Controller

Length	7.0 in (177 mm)
Width	2.0 in (52 mm)
Height	4.9 in (125 mm)
Weight	1.6 lbs (0.7 kg)

Power

Input voltage	12 VDC
Current	500 mA (min.)
Voltage adaptor	120 or 230 VCA, 50 or 60 Hz, to 12 VDC (Based on local power requirements)

Controller cooling

Cooling system	Natural convection
Maximum operating temperature	104º F (40º C)

Control & Programming

DMX input	Locking 3-pin XLR male socket
DMX output	Locking 3-pin XLR female socket
COLOR-CON output	IP66 3-pin female connector
DMX pin configuration	Pin 1 shield, pin 2 (-), pin 3 (+)
Protocols	USITT DMX512-A
DMX Channels	4 channels

Ordering Information

COLORado™ Controller	COLORCON

WARRANTY INFORMATION

Warranty	2-year limited warranty

6. Appendix

DMX Primer

The DMX protocol (USITT DMX512-A) is a networking protocol that enables a universal DMX controller device to control the features of multiple DMX compatible fixtures, whether par cans, wash lights, moving heads, followspots, foggers, proprietary fixture controllers, etc.

As any other networking protocol, the USITT DMX512-A describes the physical medium, the signals and the functions they control.

The Physical Medium

The DMX controller connects to it associated DMX compatible fixtures using a DMX connection. This connection consists of a series of jumps between the DMX controller and the various DMX compatible fixtures, also known as a *daisy chain* connection. In this type of connection, the DATA OUT of one fixture or the DMX controller connects to the DATA IN of the next fixture, and so on.

Each DMX fixture links to the previous and next DMX fixture or controller using a DMX cable. This type of cable consists of a section of shielded, two-conductor twisted pair cable with one 3-pin XLR male connector on one end and a 3-pin XLR female connector on the other end. The XLR connectors pin-out is as follows: pin 1 is the *Common* (shield), pin 2 is *Signal Negative* (S-) and pin 3 is *Signal Positive* (S+).

The Signals

The signals sent by the DMX controller to the DMX compatible fixture conform to the EIA-485 standard. These signals are unidirectional, from the DMX controller to the DMX compatible fixtures.

The stream of DMX signals consists of 512 individual, sequential channels that form a frame. The DMX controller constantly sends frames of DMX signals to the DMX connection, even if there are not that many fixtures connected to it. Because of this, there can be only one DMX controller in a DMX connection.

The functions

Each DMX channel can have any unitary value in the 000~255 range. Each DMX compatible fixture uses as many consecutive DMX channels as features the user can control. The sequential numbers assigned to each DMX channel (1~512) are also known as *DMX addresses*.

The function each DMX channel has and the results of its values (000~255) depend on each controlled fixture. Some fixtures only use a single DMX channel, while others may require 15 or more DMX channels to control all their functions.

DMX Configuration

The DMX fixture configuration consists in assigning the corresponding DMX channels to each fixture as well as determining how many channels each fixture will need to size correctly the DMX controller.

Starting Address

For the DMX controller to control each DMX fixture, the user must configure them to receive only the channel(s) required to must know on which channel(s) they will receive the control signal(s). Therefore, it is necessary to configure on each fixture which DMX channel will be its *Channel 1*. This is the fixture's starting address.

Once this assignment is complete, and based on the number of channels it uses, the fixture will respond to the DMX signals sent to the range of DMX channels that begins with the starting address.

For example, a fixture that uses six DMX channels and whose starting address is *100*, will accept DMX data sent by the DMX controller to channels 100, 101, 102, 103, 104, and 105.

Personalities

Most DMX fixtures use multiple personalities, each of them requiring a different number of channels, depending on the number of features it enables. The number of DMX channels used by a fixture may vary from only one (usually the general dimmer control) to 15 or more.

When the job does not require using all the fixture's capabilities, the user can select a more basic personality (less channels), thus allowing the DMX controller to accommodate more DMX fixtures.

DMX Connectivity (Cont.)

Assigning Addresses

Because of the different number of DMX channels used by each fixture, assigning their respective starting addresses may become a difficult task.

The user must carefully assign the starting addresses for each individual fixture to avoid DMX channel overlapping. If the DMX channels do overlap, the affected fixtures could operate erratically.

In some cases, however, the user may control multiple fixtures of the same type using the same starting address for all of them, but only if the intended result is that they operate in unison. In other words, the fixtures that share the same starting address and have the same personality will all respond in exactly the same way.

DMX Universes

A DMX universe is the set of DMX compatible fixtures connected to the same DMX daisy chain, which are receiving DMX data from the same DMX controller using the same set of 512 DMX channels.

Usually, a regular size installation will have only one DMX universe. In some cases, however, it might be necessary to define two or more universes due to distance or number of features constrains.

Most DMX controllers support only one universe, although some DMX controllers may support two or more universes. Each universe will have its own separated DMX daisy chain.

A DMX compatible fixture can only be part of a single DMX universe.

DMX Connectivity

Connecting the DMX fixtures to a DMX controller is small to medium installations is usually a rather simple operation that requires a minimum of tools and some planning (not including the actual fixture rigging).

However, in large installations it may be necessary to plan carefully the position and cabling of each fixture to avoid unexpected problems.

Fixture Location

The order in which the fixtures are connected to the DMX controller is not important and it has no effect on how a controller communicates to each fixture. However, the user should always define a physical location for the fixtures that provides for the easiest and most direct cabling.

Number of Fixtures

When using a DMX controller, the combined number of channels required by all the fixtures on the serial data link determines the number of fixtures the DMX controller has to support. Conversely, the number of onboard sliders, page buttons and fixture buttons limits the number of discrete DMX channels a DMX controller can support.

To comply with the EIA-485 standard, which is the base for the USITT DMX512-A, do not connect more than 32 fixtures without using a DMX optically-isolated splitter. Doing otherwise may result in deterioration of the digital DMX signal.

DMX Data Cabling

You must use DMX compliant data cables to link two or more DMX compatible fixtures together. You may purchase CHAUVET certified DMX cables directly from a dealer/distributor or construct your own cable.

CHAUVET Certified DMX Data Cables

Order Code	Description
DMX1.5	DMX Cable 1.5 m/4.9 ft
DMX4.5	DMX Cable 4.5 m/14.8 ft
DMX10	DMX Cable 10 m/32.8 ft

USITT recommends limiting the total length of the DMX cable (from the first fixture/controller to the last fixture) to 300 ~ 455 m (985 ~ 1,500 ft).

DMX Connectivity (Cont.)

Making your Own DMX Cable

If you choose to create your own DMX cable, make sure to use data-grade cables that can carry a high frequency signal and are less prone to electromagnetic interference. Use a Belden© 9841 or equivalent cable, which meets the specifications for EIA RS-485 applications.

Do not use standard microphone cables for DMX applications because they cannot transmit DMX data reliably over long distances.

DMX Cable Characteristics

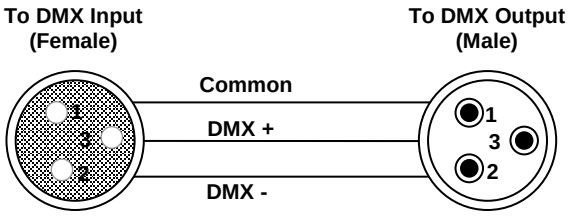
The DMX data cable must have the following characteristics:

Type:	*shielded, 2-conductor twisted pair*
Maximum capacitance between conductors:	*30 pF/ft*
Maximum capacitance between conductor and shield:	*55 pF/ft*
Maximum resistance:	*20 ohms/1000 ft*
Nominal impedance:	*100 ~ 140 ohms*

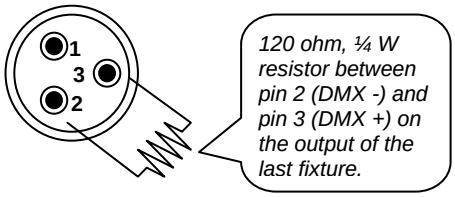
DMX Cable Connectors

Each DMX cable must have a male, 3-pin XLR connector on one end and a female, 3-pin XLR connector on the other end.

DMX Connector Configuration



To avoid signal transmission problems and interference, it is always advisable to connect a DMX signal terminator, as seen below.



Test all DMX cables with an ohmmeter to verify their correct polarity and to make sure that there are no short-circuits between any of the pins, or between any pin and ground.

If the Common wire (shield) touched the chassis ground, a ground loop could form, which may cause the fixture to perform erratically.

3-Pin to 5-Pin Conversion Chart

If you use a DMX controller or fixture with a 5-pin DMX connector, you will need to use a 5-pin to 3-pin adapter. The chart below details a proper cable conversion.

3-PIN TO 5-PIN CONVERSION CHART

Conductor	3-Pin Female (Output)	5-Pin Male (Input)
Ground/Shield	Pin 1	Pin 1
Data (-) signal	Pin 2	Pin 2
Data (+) signal	Pin 3	Pin 3
Not used		Pin 4
Not used		Pin 5

Sizing the Circuit Breakers

Calculating the total current drawn by the fixtures connected to a particular circuit is not complicated if the installer has the right information at hand and knows how to interpret it.

With the fixture's current draw information, the installer can calculate and select the right circuit breaker size (rating) to which they can connect a group of fixtures.

Using the Spec Sticker

CHAUVET fixtures come with a sticker that indicates the current they consume in a circuit at the specified voltage. This greatly simplifies calculating the total current drawn.

For instance, if the sticker on the fixture indicates, "0.1 A @ 115 VAC, 60 Hz" and the installer is connecting 12 of them on the same 115 VCA circuit, to determine the total current required by the fixtures it would be enough to do this simple calculation:

0.1 A x 12 = 1.2 A

Using the Watts/Volts Method

Some installers may prefer to determine the current drawn by the fixture by dividing its power consumption, indicated in watts (W), by the voltage (V) on the circuit. As an example, assuming that a certain fixture consumes 240 W and it is connected to a 120 VAC circuit, the current it draws would be:

240 W / 120 V = 2 A

Considering the Power Factor

The above method is accurate only with fixtures whose power factor (PF) is equal, or very close, to "1." Otherwise, the calculated current may be too low with respect to the actual current drawn by the fixture.

In fact, as the PF decreases, the difference between the current calculated using the watts/volts method and the actual current increases.

Therefore, for fixtures with a PF below "0.9," the installer must always consider the fixture's PF when using the watts figure to calculate the current it draws.

For the above example, if the published fixture's PF were "0.7," the resulting drawn current would be as follows:

2 A / 0.7 = 2.8571 A

This is approximately equal (≈) to 2.86 A, 2.9 A, or even 3 A, depending on the installer's desire for accuracy. In other words, the actual current ended up being close to 50% higher than originally calculated.

Using the Volt Amps Method

If the fixture's sticker indicates the power consumption in "volt amps" (VA), the calculation of the drawn current is simply the result of dividing the amount in VA by the voltage on the circuit (V). For a fixture with a consumption of 360 VA, the calculation would be as follows:

360 VA / 120 V = 3 A

Note that when the power consumption is in VA, the fixture's PF is never part of the current draw calculation.

Selecting the Circuit Breaker

The National Electric Code (NEC) determines that circuit breakers should handle 80% of their rated capacity for continuous loads (those being on for three or more hours) and 100% for intermittent loads. For safety reasons, CHAUVET recommends assuming that all loads are continuous.

After calculating the total current the fixtures connected to a particular circuit will draw, the installer must consider the 80% rule indicated above. For a total current of 22 A, the calculation is as follows:

22 A * 1.25 = 27.5 A

The installer should use a 30 A CB because the immediately lower CB rating, 25 A, would not be enough for this load.

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COLORado™ Controller User Manual - Rev. 01d
August 2009